

Application No. 10/577,914
Amendment dated March 18, 2011
Reply to Office Action of December 20, 2010

AMENDMENTS TO THE CLAIMS:

1. (Currently amended) A process for producing metal-matrix composite materials comprising at least one portion of magnesium or of a magnesium alloy, the process comprising:
~~and at least one production step in which thixomolding a granulate of magnesium or of a magnesium alloy and a granulate of a silicon or of a silicon alloy takes place, wherein to produce a~~
Mg₂Si phase with a volumetric content of at least 2% is dispersed into the metal-matrix composite material, wherein the step of thixomolding includes shearing to form an at least partially liquid meltmetal matrix.
2. (Canceled)
3. (Currently amended) The process as claimed in claim 1, wherein ~~[[a]] the granulate of silicon or of the [[a]] silicon alloy and [[a]] the granulate of magnesium or of [[a]] the a magnesium alloy are processed jointly in a thixomolding process.~~
4. (Currently amended) The process as claimed in claim 3, wherein ~~the amount and/or the a~~
size of Mg₂Si phase crystallites which form the metal-matrix composite material and/or or a
silicon content of [[a]] the metal-matrix composite material are is determined via the size and/or
the amount of the granulate particles of silicon or of the silicon alloy.

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5. (Currently amended) The process as claimed in claim 1, wherein in the step of thixomolding process ~~includes producing the cast body is produced from the metal-matrix composite materials~~ which is then further processed.
6. (Currently amended) The process as claimed in claim 5, wherein the cast body is formed from the metal-matrix composite materials subsequently in at least one process step.
7. (Currently amended) The process as claimed in claim 6, wherein the cast body is formed from the metal-matrix composite materials subsequently in at least one of a forging process and/or an extrusion process.
8. (Currently amended) The process as claimed in claim 1, further including the step of adding wherein in the production of the composite materials addition of at least approximately ~~roughly~~ 2% by weight Si and at most approximately ~~roughly~~ 15% by weight Si ~~takes place.~~
9. (Currently amended) The process as claimed in claim 1, wherein a Mg₂Si phase with a volumetric content of at least approximately ~~roughly~~ 5% to ~~roughly~~ at most approximately ~~roughly~~ 40% is dispersed into a metal matrix.

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10. (Currently amended) The process as claimed in claim 1, wherein the granulate of magnesium or of the magnesium alloy is in the production of metal-matrix composite materials one of ~~the~~ standard magnesium alloys AZ91, AM50, MR1230D, MR1253M or a magnesium die casting alloy ~~is used~~.

11. (Currently amended) The process as claimed in claim 1, wherein after adding the granulate of silicon or of the silicon alloy ~~Si~~ the heating rate of the thixomolding step ~~device~~ is reduced when ~~the~~ a melt first forms.

12-14. (Cancelled)

15. (New) The process as claimed in claim 3, wherein an amount and a size of Mg₂Si phase crystallites which form the metal-matrix composite material and a silicon content of the metal-matrix composite material are determined via a size and an amount of the granulate of silicon or of the silicon alloy.

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16. (New) The process as claimed in claim 3, wherein an amount of Mg_2Si phase crystallites which form the metal-matrix composite material and a silicon content of the metal-matrix composite material are determined via the amount of the granulate of silicon or of the silicon alloy.